



# Anchor Bay High School Curriculum Syllabus

## COMPUTER AIDED DESIGN IV

### CAD IV– GRADES: 10, 11, or 12

#### CURRICULUM SYLLABUS

**CURRICULUM AREA:** Drafting and Design Technology – CAD

**COURSE TITLE:** COMPUTER AIDED DESIGN IV   **GRADE LEVEL(S):** 10-12

#### **COURSE DESCRIPTION:**

This course is for students in one of the following situations.

Situation A - Students who cannot take the two hour Advanced CAD I course but wish to further their education in CAD concentrating on pre-architectural concepts. Student should refer to the course description for Advanced CAD I. The course will cover all of the concepts in Advanced CAD I however, the projects will be on a smaller scale. The architecture plan selected will be a small one story residential plan. Students may have nightly homework in this version of the course. This course will still explore the applied arts creative process and be delivered in an “on-line” environment, however it will not meet the fourth year math related credit requirement.

Situation B- Students who have already completed Advanced CAD II or CAD III and want to further their CAD education. Most of these students will register for CAD V to take concurrently with CAD IV. Students in this situation will select a major in Animation, Pre-engineering, or Pre-architecture. They will then select a minor in one of the other concentrations. The theory explored will be a more concentrated look at the theory concepts explored from Advanced CAD II, however long term projects will be of more advanced than those completed in Advanced CAD II.

#### **COURSE EXPECTATIONS / GOALS / BENCHMARKS / OBJECTIVES:**

After successful completion of this course students will be able to:

- Use and explain how access to online learning increases educational and workplace opportunities (TEC-BOC-6 & TPT-1)
- Demonstrate employability skills including computer use ethics (CES-5& 10, TEC-SHE-10)
- Develop design ideas using freehand multiview and pictorial sketches for design of pre-engineering and pre-architectural design projects.. (CES -3)
- Develop 3d parametric drawings in CAD systems and develop 2d details from the solid models.
- Develop primary, secondary auxiliary views and revolutions using a CAD system.
- Identify types of multifamily housing and discuss current trends and influences in architecture.
- List and explain advantages and disadvantages of various types of house design.
- Describe key site considerations, restrictions zoning and codes and basic construction drawings used to build a structure.
- Describe requirements for room planning in residential construction according to accepted design principles, building codes and access for the disabled.
- Develop construction plans for a residential structure including a site plan. floor plan, construction details, foundation plan, elevations, and roof plan using CAD techniques.
- Solve descriptive geometry problems using a CAD system.

- Prepare various kinds of charts from established data using CAD techniques.
- Describe ways in which the engineering design team uses and manages graphic communication.
- Develop technical multiview drawings according to third-angle projection principles, and add sectional views, fasteners, auxiliary views, and all details and assemblies using CAD techniques according to industry standards. (CES-3)
- Develop a short animation project.

### COURSE TEXTBOOKS / MATERIALS:

All Textbook, and Reference material can be accessed via the internet and the Blackboard Learning System™ . A link to this system is on the Anchor Bay School District website <http://www.anchorbay.misd.net/> or it can be linked to directly <http://bb.misd.net/> - Every Student will be issued a username and password within the first week of each course.

Textbooks will not be issued to students a classroom set of the following textbooks will be referenced as well as others.

French, Thomas E and Hesel, Jay D. Mechanical Drawing Board & CAD Techniques 13 ed. New York: Glencoe McGraw-Hill, 2003

This Textbook has an additional online resource at the following link <http://www.glencoe.com/sec/tie/mechdwg/index.html>

This textbook also references several web links.

Kicklighter, Clois E. Architecture: Residential Drafting and Design Chicago: Goodheart-Willcox , 2004

This textbook has hundreds of web links referenced within it.

All CAD courses will also use the Autodesk® Design Academy. It is a comprehensive pre-engineering, pre-architecture, and cross-discipline program developed specifically for secondary schools by experienced educators and technical experts. The academy's curriculum meets national standards and provides classroom materials that ensure students master the fundamentals of the design process while learning to use the same Autodesk® software that professionals use around the world.

The comprehensive, project-based curriculum includes a ready-to-use course syllabus, student exercises and projects, online learning resources, and cross-curricular projects for physics, science, and chemistry along with the following Autodesk software:

- Autodesk® AutoCAD 2007
- Autodesk® Architectural Desktop 2007
- Autodesk® Revit Building 9
- Autodesk® Building Systems 2007
- Autodesk Inventor® Professional 11
- Autodesk® Civil 3D® 2007 (includes Land Desktop Companion 2007)
- Autodesk® VIZ 2007
- Autodesk® Design Review 2007



Dassault Systèmes

- CATIA/DELMIA Lifecycle Management Software DELMIA

### MAJOR ASSIGNMENTS:

Grading Period	Unit Topics	Major Assignment
1 <sup>st</sup> Card Marking	Unit 1: CAD Careers, Employability Skills and Introduction to CATIA /DELMIA Unit 2: Auxiliary Views & Basic Arch Design Unit 3: Primary Design Considerations	CATIA/DELMIA Auxiliary Views, Beginning Floor Plan
2 <sup>nd</sup> Card Marking	Unit 4: Pre-Engineering & Pre-Architecture concepts review Unit 5: Site Plans & Map Drafting Unit 6: Floor Plan Updates & Working Drawings	CATIA/DELMIA – Sectioning, Fasteners & Working Drawing Views. CATIA/DELMIA-Contest Entry design project Site Plans & Continued Floor Plan
End of 1 <sup>st</sup> Semester	1 <sup>st</sup> Semester Final Exam	Comprehensive Exam from 1 <sup>st</sup> Semester

3 <sup>rd</sup> Card Marking	Unit 7: Foundation Plans, Elevations & Unit 8: Construction Details & Working Drawing Details Unit 9: Roof Details & Descriptive Geometry	CAD Contests Entries.
4 <sup>th</sup> Card Marking	Unit 10: Presentation Drawings & Introduction to Animation	Presentation Drawings & Animation Projects
End of 2 <sup>nd</sup> Semester	2 <sup>nd</sup> Semester final Exam	Comprehensive Exam for the entire Year.

**GRADING AND ASSESSMENTS:**

Grades will be based on the following:

**Theory Assignments – 20%**

- All tests and quizzes
- Daily reading and study guides

**Lab Assignments - 40%**

- All applied practice assignments, drawings, and projects.

**Employability Skills – 40 %**

- Each students and teams application of employability skills.

(Payroll Deductions) – Grade deductions from the student (employee) performance portion of the grade will be given for.

- Failure to follow any school rule.
- Any disruptive behavior
- Any reminders needed for following course rules.
- Any reminders needed to stay on task and at workstation
- Negative comments toward anyone in the school
- Tardiness
- Late Work
- Unexcused Absences
- Excused Absence if work not made up
- Refocus assignment needed for disciplinary reasons
- Failure to do and record planner activities or work log (Daily)
- Failure to clean up work areas
- Failure to complete company assigned task to appropriate standards.

**HOMEWORK:**

Students should make up homework nightly that was not completed in class, and concentrate class time on lab assignments and projects. If a student is behind on an assignment or absent he/she may access all current theory work on the website - <http://bb.misd.net> . Students may complete this work at home but must turn it in the next day they return for full credit. Some assignments are classroom assignments only, and cannot be done outside of class; this would include most drawings or short assignments that must be turned in the day they are assigned.

**CLASSWORK:**

Some assignments are classroom assignments only, and cannot be done outside of class; this would include most drawings or short assignments that must be turned in the day they are assigned. Most class work will not be accepted late unless a student is absent and turns it in upon return, or asks for permission ahead of time to turn it late. If I agree to accept the late work a late penalty will be applied to that assignment. Most labs and drawing projects cannot be done outside of class because of software requirements.

**CREDIT:**

1 YEAR 1HOUR – 1Credits & fulfills online learning experience, and the Visual Arts requirement,

**PREREQUISTE:**

Successful completion of CADI or Introduction to CAD with Instructor permission

**OTHER IMPORTANT INFORMATION**

Because this is a career and technical education course it's primary focus is to teach an employable skill. The class rules and grading system will be based on the student's demonstration of employability skills as listed in the CADD National Skill Standards document as well as the Michigan Department of Education Career and Employability Skills standards and benchmarks. All CAD courses will also meet the Michigan Merit Curriculum guidelines for an online learning experience. The sequence of CAD courses will align to the National Career Cluster Grids of Architecture & Construction, and Science, Engineering Technology & Math. All courses after Introduction to CAD will meet the Michigan Merit Curriculum credit guidelines for applied arts credit. Advanced CAD I or Advanced CAD II will meet the Michigan Merit Curriculum requirement for a fourth year math related credit.